

## Amplifier Gain

Voltage gain of the Model 312 Preamplifier may be conveniently and accurately adjusted by means of an external resistor or potentiometer attached to the mating connector. Resistor values to achieve various gain settings are shown in the External Gain Resistor Table. To achieve gain settings other than those indicated, the proper resistance value may be extrapolated from the table, or the following equation may be used:

### Gain Resistance

$$R = \frac{20,000}{\frac{A_t}{(A_i)(A_o)} - 1} - 200$$

Where:

R = External gain resistor in Ohms

$A_t = \frac{V_{out}}{V_{in}}$  = Total input to output voltage gain ratio

$A_i$  = Input transformer gain

$A_i = 8$  for 150 $\Omega$  input connection

$A_i = 4$  for 600 $\Omega$  input connection

$A_o$  = Output transformer gain

$A_o = 1.86$ , Output 1

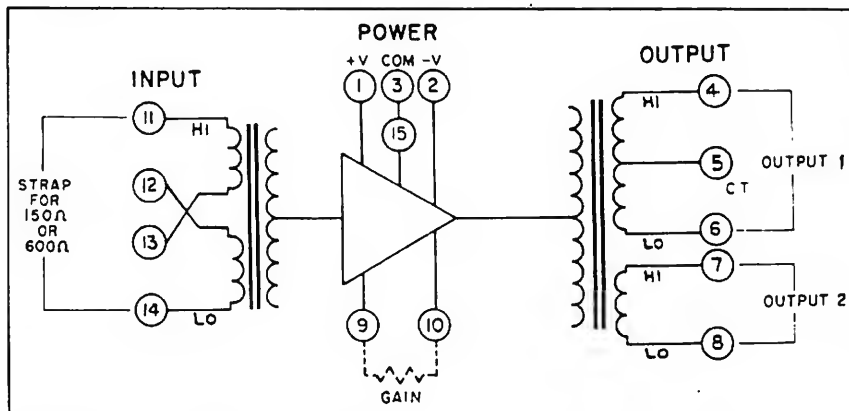
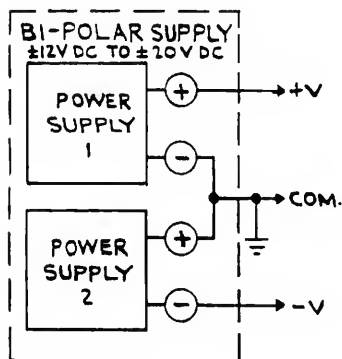
$A_o = 0.98$ , Output 2

$A_o = 2.60$ , Output 1 & 2 in series

Note: Output Load = 600 $\Omega$  in all cases.

### Connector

The connector furnished with the Model 312 contains 30 terminals in a "double readout" configuration such that only 15 terminals make contact with the printed circuit, and the second row of 15 contacts is available for external connections as desired. A plastic keying pin is provided to prevent improper insertion. This keying pin is located between terminals 2 and 3.



EXTERNAL GAIN RESISTOR TABLE

(600 Ohm Load)

Voltage Gain (dB)		Gain Resistor, Terminals 9 - 10		
600 Ohm Input	150 Ohm Input	Output 1 Terminals 4 - 6	Output 2 Terminals 7 - 8	Output 1 & 2 Terminals 4 - 8
12	18	--	Open	--
18	24	270k	18k	--
24	30	18k	6.2k	36k
30	36	6.2k	2.7k	9.1k
36	42	2.4k	1.1k	3.6k
42	48	1.0k	430	1.6k
48	54	390	120	680
54	60	100	--	220
60	66	--	--	short

Note: All resistor values in Ohms